The findings in sections cut from 189 lymph glands obtained in twenty cases of carcinoma of the stomach showed seventy-nine with metastases, 110 free from cancer, or 42 and 58 per cent. respectively. The course of the lymph streams from the stomach follows, in general, the three principal blood supplies to that organ, and hence most of the lymph glands are found in the bend of the lesser curvature. The glands situated in this region showed the greatest tendency to the formation of metastases. Also, in cases where *ulcer of the stomach* simulated a carcinomatous appearance, and in some of these the macroscopical appearance of the two is very similar, a study of the lymph glands aided in forming a diagnosis and prognosis by distinguishing the two.

Dr. Lengemann strongly recommends the radical removal of all carcinomatous glands, together with the portion of the pyloric end removed in one piece, by removing the uniting portion of omentum in all cases of carcinoma of the stomach, when the condition of the patient will permit.—*Archiv für klinische Chirurgie,* Band lxviii, Heft 2, pp. 382-418.

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## GENITO-URINARY ORGANS.

**I. Use of Adrenalin as a Local Hæmostatic in Urethral and Bladder Operations.** By PROFESSOR DR. A. VON FISCH. In cases of vesical hæmaturia in which the preliminary irrigations always cause a renewal of the hæmorrhage, and thus prevent cystoscopy, the author has filled the bladder with 100 to 150 cubic centimetres of a solution of adrenalin, 1 : 10,000, leaving the liquid three to four minutes in the bladder, and only then beginning the irrigations. By taking this precaution, all hæmorrhage was avoided, or else it was so slight that the clearing up of the contents of the bladder was readily effected and the cystoscopic examination could be executed with perfect success.

In operating on tumors of the bladder, after opening the bladder above the pubis, several applications of the adrenalin solution,

1 : 1000, are made to the tumors and their immediate neighborhood, using a cotton pledget for the purpose. It will render possible the extirpation of the tumor in the blanched tissue almost without any loss of blood whatever. In this way the thorough removal of the base of the tumors is assured, and there is less danger of leaving behind, when dealing with multiple papillomata, a little of the oft minute new formations. Inasmuch as the anæmia of the mucous membrane persists for a comparatively short time, and the contraction of the vessels seems to be followed by their not inconsiderable dilatation, it is to be recommended, if one does not wish to stitch up the incision in the mucous membrane, that the wound be carefully packed, and the bladder also tamponed, in order to avoid secondary hæmorrhage. For the endoscopic removal of papillomata of the bladder, it is sufficient to fill the bladder with adrenalin solution, 1 : 10,000, as in the performance of cystoscopy.

In very narrow strictures which are difficult to enter, the application of a few drops of adrenalin, 1 : 1000, at the entrance to the stricture suffices so to reduce the swelling of the mucosa as to materially facilitate the introduction of the sound.

In the difficult catheterism of hypertrophied prostates, a preliminary instillation of 1 to 2 cubic centimetres of adrenalin, 1 : 1000, into the prostatic urethra is of great advantage. The introduction of the catheter is more readily performed and usually without bleeding, even when the prostate gland is congested. The preparation used by von Fisch is a solution containing adrenalin chloride, 0.1; sodium chloride, 0.7; chloretone, 0.5; distilled water, 100.0.—*Wiener klinische Wochenschrift,* 1902, No. 31.

**II. Observations on the Functioning of the Ureters and Kidneys as a Means of Surgical Diagnosis.** By Dr. Frederick Straus (Frankfurt am Main). The method introduced by Korányi for the estimation of the osmotic pressure of the blood and urine by determining the depression of their freezing points seems

destined to give us additional security in performing nephrectomy. It marks the limits within which the surgeon may be permitted to remove a diseased kidney. In the investigations concerning the functioning of a single kidney, the excretion of each organ must be obtained separately, *i.e.*, by separate catheterization of each ureter. The author has made more than fifty-five catheterizations of each ureter, the products of which have been separately analyzed. The analysis consisted in the estimation of urea, phosphoric acid, and chlorides quantitatively; also of glucose obtained by administering phloridzin, and the determination of the molecular density obtained by observing the lowering of the freezing point.

Physiologically active kidneys excrete through their appropriate ureters their urine at regular intervals, which alternate in action with each other. The intervals between the several discharges from the same ureter can vary within broad limits. They depend upon the concentration of the urine. In a concentrated urine the pauses may be as long as five minutes. The thinner the urine the shorter the periods. If the urine is very watery, the successive contractions of the ureters follow one another rapidly. They may diminish to intervals of four seconds. The total volume, however, of the excreted fluid undergoes no marked changes.

The quantity of fluid escaping at each contraction of the ureters fluctuates in the majority of cases between two-tenths to four-tenths centimetre. The volume of urine in the separate spurts remains the same, only the ureter contractions become more or less frequent.

If a catheter is introduced into the ureter, and the ureteral orifice (or lips of the valve) is watched at the same time through a cystoscope, it will be seen that immediately the contractions of the ureters and correspondingly the periods of excretion from the ureters follow more rapidly one another. The stiff catheter, however, offers a certain resistance to the peristalsis of the ureters, and the contractions become less frequent. This is least notice-

able if the catheter lies only a little way up the ureter, but, as it proceeds farther up, the slowing of the contractions becomes more obvious.

By advancing still higher an increased rapidity in excretion again appears the nearer the catheter approaches the pelvis of the kidney, until finally, as the eyelet of the catheter enters the pelvis, a continuous flow is set up.

The periodic spurts occur under strong pressure. From the contracting ureter the urine enters the bladder in whorls of diffusion currents, while from the introduced catheters it issues in drops. In the case of a diseased kidney, we see marked deflection from this type. In general, there is a slowing of the contractions of the ureters, which in number fall far behind those of the healthy kidney. This phenomenon appears especially marked in advanced unilateral pyonephrosis and tumors of the kidney.

If we compare, also, the volume of urine excreted from both kidneys, we will see that one within a short time excretes a large amount of fluid. If the other kidney is the seat of a tumor, or is in great part necrosed or tuberculous, or if a stone fills the pelvis, it excretes during the same time only a few cubic centimetres, or none at all.

Through the work of Casper and Richter finer relations in the functioning of the two kidneys have been obtained. They maintain that normal kidneys excrete the same amount of nitrogen and chlorine, and also the amount of sugar excreted following administration of phloridzin and the molecular density are the same. As the result of experimenting in twenty-two cases, the author substantiates these claims.

A diseased kidney does not work the same, but excretes in equal periods products that in relation to their contents of nitrogen, chlorine, sugar after phloridzin, and molecular density differ markedly. The pathologically functioning kidney produces not so great a molecular density as the sister organ, but holds back more molecules; it has a less molecular density. It excretes

accordingly less chlorine, less nitrogen, and produces less sugar from phloridzin. According to the kind and quantity of the sugar eliminated, especially, we have an important criterion in connection with the functioning of the ureters by which to make an estimation of how much functioning renal epithelium remains.

The following are the conclusions reached by the author as the result of his observations:

(1) The functioning of physiologically active kidneys is always the same in comparing right with left kidney. This functioning is, however, a changing one, indeed, at every moment in one and the same kidney.

(2) The functioning of pathologically working kidneys always shows, comparing left with right kidney, differences, and is in one and the same kidney at each moment a changing one and is never constant.

(3) Molecular concentration, chlorine, urea, phosphoric acid, as also phloridzin sugar in the urine, change from moment to moment in physiological as well as in pathological kidneys, but in the former case the opposite kidney corresponds, while in the latter (pathological) there is always a difference.

(4) The taking of fluids has an especial influence upon the osmotic pressure. A difference of 200 per cent. and more by this method can be obtained.

(5) There is always a gradual change in concentration in direct relation to digestion and resorption processes. The concentration sinks gradually with diminution of digestion and resorption.

(6) We cannot fix a definite point for the freezing of urine above or below which we may definitely say a urine is pathological. It is easy, by means of adding fluid to the urine, to change or prevent the freezing point at will. A short time after the taking of fluids, the influence of such on the urine is shown by a sinking of the freezing point; for the smaller the numerical molecular value per unit volume, the lower will be the freezing point.

The ratio of the freezing point in the *total* urine is only of value in consideration with the total consumption and excretion of fluids and in relation to metabolism experiments. On the estimation of chlorides, however, exact conclusions may be based. Under the influence of drinking fluids and the consequent dilution of the urine, a change *on one side only* is an indication of the functional decline of that kidney; this change manifests itself at a time earlier than the ordinary tests of the functional activity of the kidney fail, so that this change, after the consumption of fluids, is an indication of a latent functionally weak organ.—*Münchener medicinische Wochenschrift,* 1902, July 22, pp. 1217.

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